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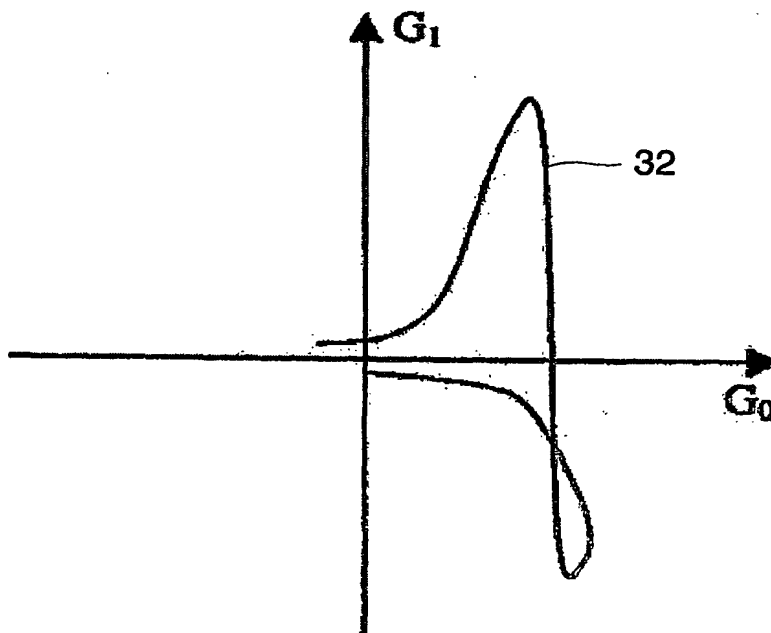
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(54) Title: **MAGNETIC RESONANCE METHOD WITH NON-LINEAR MAGNETIC FIELD GRADIENTS**



(57) Abstract: A magnetic resonance imaging method is presented for forming an image of an object, wherein a stationary magnetic field and temporary magnetic fields having a position dependent field pattern are applied, magnetic resonance signals are acquired by at least one receiver antenna, spins are excited in a part of the object, MR signals are acquired during application of the position-dependent field patterns ( $G_1$ ,  $G_2, \dots$ ) and a magnetic resonance image is derived from the sampled magnetic resonance signals. The field patterns are substantially non-linear, the number  $N$  of total field patterns is larger than 3, and at least  $N - 1$  field patterns are independently controllable in field strength. The magnetic resonance signals are acquired in a sub-sampling fashion.